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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/533,460	05/02/2005	Saburo Furusho	1417-505	4067
23117 7590 11/18/2008 NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203				
EXAMINER				
CALANDRA, ANTHONY J				
ART UNIT		PAPER NUMBER		
1791				
MAIL DATE		DELIVERY MODE		
11/18/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/533,460

Applicant(s)

FURUSHO ET AL.

Examiner

ANTHONY J. CALANDRA

Art Unit

1791

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 20 August 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Detailed Office Action

1. The communication dated 8/20/2008 has been entered and fully considered.
2. Claim 1 is currently pending.

Response to Arguments

3. Applicant's arguments filed 8/20/2008 have been fully considered but they are not persuasive.

Applicant states that the art references as KONO actually KAWANO. The reference is referred to as KONO in the esp@cenet database. For purpose of examination will refer to the reference as KAWANO to match the applicant's preference.

Applicant argues that the machine translation of paragraph [0023] of KAWANO is incomplete and actually states that acid is flowed then subsequently caustic soda may be flowed through the ion exchange column. Applicant argues that the instant application is novel and unobvious because KAWANO provides no description or suggestion of directly treating the ion-exchange resin with caustic soda to regenerate the exchange resin and that the system is a closed system.

Upon review with a translator the examiner agrees with the applicant's contention that the caustic soda treatment occurs after an acidic treatment. However, applicant's arguments are not commensurate with the claim. The applicant does not claim directly treating with caustic, further the claim is using the *comprising* language and thus a step prior to caustic regeneration could be used. Finally, applicant does not claim a closed system.

To claim this feature as argued, the applicant would need to claim "(H) a regeneration step *consisting essentially of* treating the cation exchange resin used in the potassium ion

removal step (G) with an aqueous sodium hydroxide solution to regenerated the cation exchange resin". Examiner notes said claim amendment would require further search/consideration after a FINAL rejection.

Specification

4. In light of amendment the examiner has withdrawn the objections to the specification.

Claim Objections

5. In light of amendment the examiner has withdrawn the objections to claim 1.

Claim Rejections - 35 USC § 112

6. In light of amendment the 112 2nd rejection to claim 1 has been withdrawn.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35

U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Handbook for Pulp and Paper Technologists* by SMOOK in view of JP 2002-138382 KAWANO et al., hereinafter KAWANO and U.S. Patent # 5,616,280 MOORE et al., hereinafter MOORE, and/or in the alternative MOORE in view of SMOOK and KAWANO.

Examiner notes that steps A through F of the first paragraph read on virtually every bleached kraft mill in the United States and the world. However for completeness of the record the examiner has cited the generalist review textbook SMOOK.

SMOOK discloses a process for producing kraft pulp using a cooking step of raw chips with sodium hydroxide and sodium sulfide (*process for producing kraft pulp, which comprises: (A) a cooking step of treating raw chips with a cooking liquor containing sodium hydroxide and sodium sulfide as main components to convert the chips into pulp* [pg. 74 section 7.2 and figure 7-1]). SMOOK further discloses washing the pulp and recovering the result organic and inorganic chemicals (*(B) a pulp washing step of washing the resultant pulp, and separating and recovering a black solution containing sodium carbonate and sodium sulfate, which are turned from the cooking liquor, therefrom* [pg. 74 Figure 7-1, pg. 75, pg.76, Figure 7-3]). SMOOK discloses that an alkaline extraction stage is a common bleaching stage for kraft pulps (*a pulp bleaching step of treating the pulp with a bleaching agent in the presence of alkali* [pg. 163-64, 174-175]). SMOOK further discloses concentrating the weak black liquor in evaporators which was recovered from the washers (*(D) a black solution concentrating step of concentrating the black solution separated and recovered in the pulp washing step (B)* [pg. 76 Figure 7-3]). SMOOK discloses burning the black liquor in a recovery furnace which converts the sodium sulfate to sodium sulfide and further recovers ashes in a electrostatic precipitator

((E) a black solution combustion step of burning the concentrated black solution to reduce the sodium sulfate into sodium sulfide and further recovering ashes containing sodium sulfate and sodium carbonate from a combustion exhaust gas generated therein by a dust collector [pg. 74 Figure 7-1, pg. 76, Figure 7-3, pg. 148, Figure 10-25]). The liquid smelt from the recovery boiler is causticized using calcium oxide to form sodium hydroxide and the formed white liquor is reused in the cooking step ((F) a caustification step of treating a green solution as an aqueous solution of a smelted product recovered from the combustion step with calcium oxide to reduce sodium carbonate contained in the green solution to sodium hydroxide, thereby obtaining a white solution, said white solution recovered in the caustification step (F) being recycled to the cooking step (A) [pg. 74 Figure 7-1, pg. 76, Figure 7-3, pg. 149-150].

SMOOK does not disclose treating the recovered precipitator ash in any way before mixing it with the black liquor from solution from the evaporation step [pg. 148]. KAWANO discloses using a cation exchange resin to absorb potassium ions from ashes generated in a recovery boiler electrostatic precipitator [paragraphs 0008 and 0009]. The ashes are then diluted to form a solution of ashes [paragraph 0010]. The potassium is removed by a Na type regeneration which is done by a method **comprising** treating it with caustic alkali of sodium, sodium hydroxide (*solution combustion step (E) by the dust collector through a packed bed filled with a Na-type cation exchange resin to adsorb and remove potassium ions contained in the aqueous solution; and (H) a regeneration step of treating the cation exchange resin used in the potassium ion removal step (G) with an aqueous sodium hydroxide solution to regenerate the cation exchange resin [paragraph 0023]).*

At the time of the invention it would have been obvious to treat the precipitator ash of SMOOK using the cationic exchange resin of KAWANO prior to the ash being recombined with the concentrated black liquor. A person of ordinary skill in the art would be motivated to do so to remove chlorides and potassium from the liquor cycle which cause corrosion as suggested by KAWANO [paragraph 0003].

Neither SMOOK nor KAWANO disclose where the spent caustic alkali which is used to regenerate the packed bed ion exchanger would be sent. MOORE discloses that in pulp bleaching sodium hydroxide and potassium hydroxide can both be used for bleaching successfully[abstract, claims 11 and 12, column 2 lines 33-44]. At the time of the invention it would have been obvious to use the spent caustic alkali containing potassium hydroxide from regenerating the ion exchanger of KAWANO in the bleaching process of SMOOK. It is obvious that a person of ordinary skill in the art would be motivated to recycle spent chemicals to process that needs said waste chemicals and MOORE states that potassium/sodium hydroxide can be used in bleaching. SMOOK discloses that spent chemicals are typically recycled in kraft mills, for example, the whole kraft recovery cycle, the lime cycle, precipitator ash reclaim, and using waste sulfuric acid for salt-cake makeup [pg. 149]. Such recycling allows the mill to be profitable and provides financial motivation. Further, it would have been *prima facie* obvious to substitute the sodium/potassium hydroxide solution produced by the ion-exchange resin for the sodium hydroxide used in the alkaline extraction bleaching of SMOOK. A person of ordinary skill in the art would reasonably expect success as MOORE teaches that sodium/potassium hydroxide can be interchanged.

In the alternative, it would have been obvious to produce the needed sodium/potassium solution described by MOORE using the process of SMOOK/KAWANO. It is *prima facie* obvious to substitute prior art elements to yield predictable results. In the instant case MOORE describes a bleaching process that requires sodium/potassium hydroxide chemicals. The process of SMOOK/KAWANO discloses a method for producing said sodium/potassium hydroxide chemicals. Therefore, without evidence to the contrary it would be obvious to a person of ordinary skill in the art to substitute the potassium/sodium hydroxide solution of MOORE with the potassium/sodium hydroxide of SMOOK/KAWANO. As both solutions contain the same chemicals a person of ordinary skill in the art would reasonably expect success.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANTHONY J. CALANDRA whose telephone number is (571)

270-5124. The examiner can normally be reached on Monday through Thursday, 7:30 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/AJC/

/Eric Hug/
Primary Examiner, Art Unit 1791